TITLE: S lar en rgy perated air pump

BACKGROUND OF THE INVENTION

The present invention relates to air pumps and more particularly to a solar energy operated air pump a fisherman fishing at riverside, beach or of the sea requires a pail containing water to put the baits and/or the fishes he caught. And an air pump is needful to supply with the fresh air into the water in order to keep the fishes alive and fresh. The conventional air pump contains a motor operated only by batteries which can not last too along if the fisherman works all day and all night. The fishes and the baits are going to be dead when the pump stops to supply the fresh air into the pail containing water that causes great losses to the fisherman. If he carries a lot of spare batteries. It is inconvenient for him to change the battery.

SUMMARY OF THE PRESENT INVENTION

The present invention has a main object to provide a solar energy operated air pump in which a solar cell supplies the electricity to actuate a motor pump to rotate continuously without carrying spare batteries.

Another object of the present invention is to provide a solar energy operated air pump in which the solar cell is inlaid in an upper lid of a box so as to save space.

Accordingly, the solar energy operated air pump of the present invention comprises generally a box including an

upper lid and a lower lid and a solar cell inlaid in the upper lid and protected by a transparent protection layer. Inside the box, there are a motor, at least an air extractor and a battery chamber. The motor has an axis to rotate a cam which actuates alternatively the push rods each includes a push plate to repeatedly press the air extractors to input the fresh air through an air inlet and to output the fresh air through an air outlet. A switch respectively connects to the motor, the solar cell and the battery chamber. In order that the motor can be either operated by the solar cell in the sunny days or operated by the batteries in the cloudiness and night-time.

The present invention will become more fully understood by reference to the following detailed description thereof when read in conjunction with the attached drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 is a perspective view to show an outlook of the air pump of the preferred embodiment of the present invention,

Figure 2 is a top view of Fig. 1,

Figure 3 is a side view of Fig. 1,

Figure 4 is a sectional view to show the components disposed inside the air pump,

Figure 5 is a side view to show that the upper lid is opening, and

Figure 6 is a perspective view to show that the upper lid

is already opened and the solar cell begins to effective.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

With reference to Figs. 1 to 4 of the drawings, the solar energy operated air pump of the present invention which is designated as 10 and comprises a rectangular box 11, a lower lid 12 connected to the open bottom of the box, a pair of axle sleeves 111 symmetrically formed on the top of one end of the box 11, a locking slot 112 centrally formed in the top of the other end of the box 11, an upper lid 20 openably covering the open top of the box 11 and having a pair of axle pins 21 symmetrically formed on one end rotatably engaged within the axle sleeves 111 and a latch 22 centrally formed under the other end releasably engageable within the locking slot 112 (as shown in Fig. 5), and a flat solar cell 23 inlaid into the upper lid 20 and protected by a layer of transparent painting or a piece of transparent glass.

Inside the box 11, there are a motor 13, a pair of air extractors 14, a battery chamber 15 and a switch 16 which protrudes to outside of the box 11. The motor has an axis 131 connected to an eccentric cam 132 which is in turn pivoted to a pair of push rods 133. Each of the push rods perpendicularly connected to a push plate 134. The push plates 134 press the air extractors 14 which are made of rubber so that they have the elasticity to restore immediately after deformed by the press of the push plates 134. The air

extractors each has an air vessel 141 respectively connected to the opposing inner surfaces of the box 11 and each of the air vessels 141 has an air outlet 142 and an air inlet 143. Each of the air outlet 142 has a non-return valve to insure the fresh air flowing outward and each of the inlet 143 has also a reverse non-return valve to ensure the fresh air flowing into the air vessel without flowing backward. A pair of hoses connected respectively to the air outlets 142 and extended into the water in the pail (as shown in Figs. 5 and 6) to supply the fresh air into the pail. The battery chamber 15 contains a pair of 3-A spare batteries 151. The switch 16 is of three steps type and respectively connects the motor 13 the solar cell 23 and the battery chamber 15 so that the switch can individually control the solar cell 23, the battery chamber 15 or shut out the electric power. Further has a clip 121 on the outer surface of the lower lid 12 for enabling the air pump attached to the pants belt of the fisherman or other appropriate objects.

Based the above discussed structure and function, the upper lid 20 may open a predetermined angle or keep the lid 20 closed to let the solar cell toward the sun light to absorb the solar energy (as shown in Figs. 5 and 6) in order to transmit into electricity to rotate the motor 13 and the cam 132 which actuates the push rods 133 to slide about to press the air extractors 14 forcing the fresh air in the air vessels

141 flowing out of the outlet and to continuously supply the fresh air into the water in the pail to keep the fishes and baits alive.

The solar cell is adopted to various objects, by the manufacturers. But few of them used the solar cell in the air pump which provide great convenience to the fisherman. It provides endless solar energy in the sunny days. Besides the addition of the solar cell in the air pump needs not to enlarge the volume of the pump but provides more convenience to the fisherman.

Note that the specification relating to the above embodiment should be construed as exemplary rather than as limitative of the present invention, with many variations and modifications being readily attainable by a person of average skill in the art without departing from the spirit or scope thereof as defined by the appended claims and their legal equivalents.